

## **THE CLAIMS**

### **What is claimed is:**

1. A semiconductor manufacturing process facility requiring use therein of air exhaust for its operation, said facility including clean room and gray room components, with said clean room having at least one semiconductor manufacturing tool therein, and wherein air exhaust is flowed through a region of said clean room, said facility comprising an air exhaust treatment apparatus arranged to (i) receive air exhaust after flow thereof through said region of said clean room, (ii) produce a treated air exhaust, and (iii) recirculate the treated air exhaust to an ambient air environment of the facility.
2. The semiconductor manufacturing process facility of claim 1, wherein the treated air exhaust is discharged from the air exhaust treatment apparatus to the gray room of the facility.
3. The semiconductor manufacturing process facility of claim 1, wherein the exhaust treatment apparatus comprises a chemical filter arranged for contacting air exhaust to remove contaminant species therefrom.
4. The semiconductor manufacturing process facility of claim 3, wherein the exhaust treatment apparatus comprises an air filter arranged for contacting air exhaust to remove particulate material therefrom.
5. The semiconductor manufacturing process facility of claim 4, wherein the chemical filter is upstream of the air filter.
6. The semiconductor manufacturing process facility of claim 1, wherein the exhaust treatment apparatus comprises a heat exchanger arranged to cool air exhaust flowed therethrough.
7. The semiconductor manufacturing process facility of claim 3, wherein the exhaust treatment apparatus comprises a heat exchanger arranged to cool air exhaust flowed therethrough.

8. The semiconductor manufacturing process facility of claim 4, wherein the exhaust treatment apparatus comprises a heat exchanger arranged to cool air exhaust flowed therethrough.
9. The semiconductor manufacturing process facility of claim 1, comprising a house exhaust system, wherein the air exhaust is not flowed through the house exhaust system.
10. The semiconductor manufacturing process facility of claim 1, wherein the at least one semiconductor manufacturing tool includes an ion implanter.
11. The semiconductor manufacturing process facility of claim 1, wherein the at least one semiconductor manufacturing tool includes a gas cabinet.
12. The semiconductor manufacturing process facility of claim 1, wherein the at least one semiconductor manufacturing tool includes a point-of-use abatement tool.
13. The semiconductor manufacturing process facility of claim 1, wherein the exhaust treatment apparatus includes a toxic gas monitor.
14. A method of operating a semiconductor manufacturing process facility requiring use therein of air exhaust for its operation, said facility including clean room and gray room components, with said clean room having at least one semiconductor manufacturing tool therein, and wherein air exhaust is flowed through a region of said clean room, said method comprising treating air exhaust after flow thereof through said region of said clean room to produce a treated air exhaust, and recirculating the treated air exhaust to an ambient air environment of the facility.
15. The method of claim 14, wherein the treated air exhaust is discharged to the gray room of the facility.
16. The method of claim 14, wherein the treating comprises chemical filtering of the air exhaust.
17. The method of claim 14, wherein the treating comprises mechanical air filtering of the air exhaust.

18. The method of claim 14, wherein the treating comprises cooling the air exhaust.
19. The method of claim 14, wherein the semiconductor manufacturing process facility includes a house exhaust system, wherein said air exhaust is not flowed through the house exhaust system.
20. The method of claim 14, wherein the at least one semiconductor manufacturing tool includes an ion implanter.
21. The method of claim 14, wherein the at least one semiconductor manufacturing tool includes a gas cabinet.
22. The method of claim 14, wherein the at least one semiconductor manufacturing tool includes a point-of-use abatement tool.
23. The method of claim 14, further comprising monitoring the air exhaust with a toxic gas monitor.